



What is claimed is:

1. An information recording medium for storing at least one object containing multiplexed encoded video data and encoded audio data, and management information for managing the one or more objects, wherein:

the image data includes intra-coded picture data and inter-coded picture data;

the management information includes map information for the at least one object, the map information managing the objects in blocks of a fixed length and correlating the presentation time of the video data multiplexed to the objects to the blocks, and

the map information indicating which of the blocks constituting the object includes the leading data of the intra-coded picture data.

2. The information recording medium according to claim 1, wherein the object has a packet structure, and

the block is a unit for grouping and managing data larger than at least one object packet.

3. The information recording medium according to claim 2, wherein the recording medium is a disc shaped recording medium, and the fixed length block is a unit of at least one ECC block.

4. The information recording medium according to claim 1, wherein the map information using flag information allocated to each block indicates which block includes the

leading data of intra-coded picture data of an object included in the block.

5. The information recording medium according to claim 1, wherein the map information using flag information allocated to each block indicates which block includes the last data of the intra-coded picture data of an object included in the block.

10 6. The information recording medium according to claim 1, wherein there are at least two objects including a first object and a second object,

the first object being an object for which the location of intra-coded picture data in the object is managed by the management information,

15 the second object being an object for which the location of intra-coded picture data in the object is not managed by the management information; and

the object correlated by the map information
20 is the first object.

7. The information recording medium according to claim 6, wherein the map information has, as information to identify the first object and the second object, a validity flag which indicates whether map information for the object
25 is valid.

8. The information recording medium according to claim 6, wherein the management information has a self-encoding flag indicating whether the object is self-encoded.
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5 9. The information recording medium according to
claim 1, wherein the at least one object is an MPEG
transport stream, and the intra-coded picture data is an I-
picture.

10 10. An information recording medium for storing at
least two objects containing multiplexed encoded video data
and encoded audio data, and management information for
managing the at least two objects, wherein:

15 the video data includes intra-coded picture data
and inter-coded picture data;

20 the at least two objects include at least a first
object and a second object;

25 the first object is an object for which the
location of intra-coded picture data in the object is
managed by the management information,

30 the second object is an object for which the
location of intra-coded picture data in the object is not
managed by the management information;

35 the management information is information for
separately managing the first object and the second object,
and includes map information for each first object; and

40 the map information correlates a playback time of
the corresponding first object with the location of intra-
coded picture data included in the object.

45 11. The information recording medium according to
claim 10, wherein the management information has, as
information to identifying the first object and second

object, a validity flag which indicates whether the map information for each first object and second object is valid.

5 12. The information recording medium according to claim 10, wherein the management information has a self-encoding flag indicating whether the object is self-encoded.

10 13. An apparatus for recording information to the information recording medium as described in claim 1, the information recording apparatus comprising:

15 an interface for inputting the object from an external part;

a generating section for generating management information corresponding to the input object; and

20 a recording section for recording the object and the management information to the information recording medium;

wherein the generating section includes:

25 a detection section for determining if a block contained in the input object includes intra-coded picture data, and

a producing section for producing the management information containing map information based on the result from the detection section.

14. A method of recording information to the information recording medium according to claim 1, the recording method comprising:

30 receiving the object input from an external part;

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generating management information for the input object; and

recording the object and the management information to the information recording medium;

5 wherein the generating includes:

detecting whether the input object is a first object or a second object;

10 determining if a block contained in the input object includes intra-coded picture data if the input object is a first object; and

producing the management information containing map information based on the result by the determining.

15 15. An apparatus for reproducing data from the information recording medium according to claim 1, the apparatus comprising:

20 a playback section for reading and reproducing the object and management information from the information recording medium;

a user interface for receiving an instruction specifying the object to play back, and an instruction specifying a playback time for starting playback of the object; and

25 a controller for controlling the playback section;

wherein when the specified object is a first object, the controller controls the playback section so as to identify picture data which is included in the specified object and corresponds to the specified playback time based

on the map information of the management information, and begin the playback from the identified picture data.

16. A method of reproducing data from the information recording medium according to claim 1, the method comprising:

reading and reproducing the object and management information from the information recording medium;

receiving an instruction specifying the object to play back, and an instruction specifying a playback time for starting playback of the object; and

controlling the reading and reproducing such that, when the specified object is a first object, the picture data included in the specified object and corresponding to the specified playback time is identified based on the map information of the management information, and the playback begins from the identified picture data.

17. An information recording apparatus for recording information to the information recording medium according to claim 10, the apparatus comprising:

an interface for inputting the object from an external part;

a generating section for generating management information corresponding to the input object; and

a recording section for recording the object and the management information to the information recording medium;

wherein the generating section includes

30 a detection section for determining if a

block contained in the input object includes the intra-coded picture data, and

a producing section for producing the management information containing map information based on
5 the result from the detection section.

18. The apparatus according to claim 17,

wherein the management information has, as
10 information to identifying the first object and second object, a validity flag which indicates whether the map information for each first object and second object is valid; and

wherein the generating section determines whether
the input object is a first object or a second object,

15 generates the management information containing the map information for the first object, and sets the validity flag in the management information to a valid state, when the input object is determined to be a first object, and

20 generates the management information for the second object, and sets the validity flag in the management information to an invalid state, when the input object is determined to be a second object.

25 19. A method of recording information to the information recording medium according to claim 10, the recording method comprising:

inputting the object from an external part;

generating management information for the input

30 object; and

recording the object and the management information to the information recording medium;
wherein the generating includes:

5 detecting whether the input object is a first object or a second object, and if the input object is a first object determining if a block contained in the input object includes intra-coded picture data, and

10 producing the management information containing map information based on the result by the determining.

20. The method according to claim 19,

15 wherein the management information has, as information to identifying the first object and second object, a validity flag which indicates whether the map information for each first object and second object is valid; and

20 wherein the generating includes determining whether the input object is a first object or a second object, and

25 when the input object is determined to be a first object, generating the management information including the map information for the first object, and setting the validity flag of the management information to a valid state, or

when the input object is determined to be a second object, generating the management information for the second object, and setting the validity flag in the management information to an invalid state.

21. An apparatus for reproducing data from the information recording medium according to claim 10, the apparatus comprising:

5 a playback section for reading and reproducing the object and management information from the information recording medium;

10 a user interface for receiving an instruction specifying the object to play back, and an instruction specifying a playback time for starting playback of the object; and

15 a controller for controlling the playback section;

wherein when the specified object is a first object, the controller controls the playback section so as to identify picture data which is included in the specified object and corresponds to the specified playback time based on the map information of the management information, and begin the playback from the identified picture data.

20 22. A method of reproducing data from the information recording medium according to claim 10, the method comprising:

reading and reproducing the object and management information from the information recording medium;

25 receiving an instruction specifying the object to play back, and an instruction specifying a playback time for starting playback of the object; and

30 controlling the reading and reproducing such that, when the specified object is a first object, the picture data included in the specified object and corresponding to

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the specified playback time is identified based on the map information of the management information, and the playback begins from the identified picture data.